

Pervious Concrete: A Review

Gomasa Ramesh



Abstract: Pervious Concrete is a new type of concrete used widely in the construction industry. It has good physical and also mechanical properties, and it gives good strength. It is used mainly in the water management of the system. So, by using this application, concrete is very famous. There are many advantages to using pervious concrete, and compared to regular conventional concrete, it has some special properties. The special property of permeability. In this transfer or transmission of air or water into the soil or system. This paper author mainly explains the importance and uses, and advantages of Pervious Concrete and explained the Materials used for pervious concrete. This type of concrete is firstly used in Europe afterward, and it can be widely used as construction materials for structures. This paper may help understand Transparent Concrete for everyone easily. It gives a quick review of the Pervious Concrete.

Keywords: Sustainable drainage system, Porous Concrete, Rainwater management system, Permeability, Mix design, Mechanical Properties.

I. INTRODUCTION

Pervious concrete is an important type of concrete used in the construction of structures. It is also known as Pervious Concrete. It contains many aggregates with small fine aggregates, and concrete's porosity is very high. It is used to pass water from concrete. It is extensively used in the areas of parking and low traffic conditions and also greenhouses. It is used earlier in the year of 18th Century (1800). It was first used in Europe and popular in the 19th Century, and in India, it was famous in the 20th Century. It is mostly used for the management of stormwater and control of pollution. The first used pervious Concrete is Scotland after that England. It was also very famous in the US in the middle of the 19th Century. Now, this concrete is used worldwide, and it contains a wide range of applications. Following is the figure of Pervious Concrete [1].



Fig. Pervious Concrete

II. LITERATURE REVIEW

Mazur 2019 et al.

In this Research Paper author is explained on importance of pervious concrete in the construction sector. This author is more described on properties and Materials of pervious concrete and conducted different tests such as compressive and water absorption tests and capillary tests. The test

Manuscript received on 01 April 2021 | Revised Manuscript received on 26 April 2021 | Manuscript Accepted on 15 May 2021 | Manuscript published on 30 May 2021.

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results are also good. This author also explained environmental benefits and financial benefits and explained design aspects and their importance. The author has also demonstrated the composition of pervious concrete mix

Shreya 2018 et al.

This Research Paper Author has explained the advantages of the Pervious Concrete used in structures and explained materials used and design methodology used in the pervious concrete. This author uses different tests like sieve analysis and specific gravity tests, water absorption tests, and described aggregate crushing test and impact test on pervious concrete. The author has explained the experimental method and design methodology very effectively and excellently.

Harshith 2020 et al.

This Research Paper author is more explained on advantages of pervious concrete and applications of pervious concrete used in constructing structures. This author also explained experimental materials used in the previous concrete and properties of pervious concrete and mix design and specifications.

III. METHODOLOGY

It is the best management practice for Pervious Concrete. It is necessary for drainage systems and also important for storm sewers. Most of this can be used for reducing runoff from paved areas. It can be used for the larger area with lower costs. So, it is also called an infiltration basin because it allows stormwater to infiltrate the soil. It is used for the transfer or allows of water and air into the soil or structure. It gives better structural integrity and also gives good workability. It is also one of no fine concrete. It also contains better rheological properties. It is most importantly used for recharging the groundwater.

OBJECTIVES& USES

- Used in sustainable construction
- Roofing's
- Pavements
- Floors
- Stormwater management
- Protect the quality of water
- Best management
- Streets of Residential areas
- Walkways
- Pedestrians
- Low traffic volumes
- Slabs
- Low cost
- Used for walls (load-bearing and partition)

MATERIALS USED

In this concrete there are two important materials are used, they are as follows. The first one is Cement, and the second one is Coarse aggregates fibers and water, Fly ash, etc., and in this, no fine aggregates are used. This water-cement ratio normally varies between 0.2 to 0.4, and the voids ratio normally 20 percentage. A rapid air system is used to measure air content in the structure.

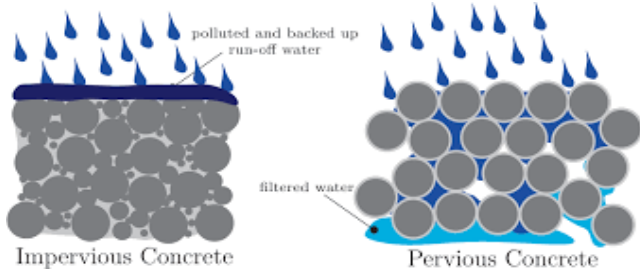


Fig. Pervious concrete



Fig. Pervious Concrete in roads

IV. APPLICATIONS

- Multi-story buildings
- High rise structures
- Load-bearing walls
- Roads
- Parking
- Linings
- Walls
- Swimming pools
- Noise barrier



Fig. Pervious Concrete in pavements



Fig. Stormwater



Fig. Storm Sewer



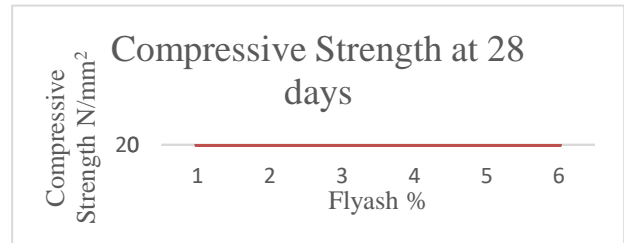
Fig. Parking Area



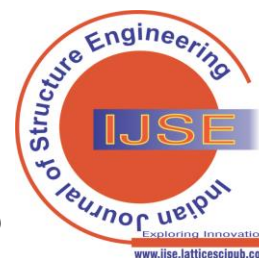
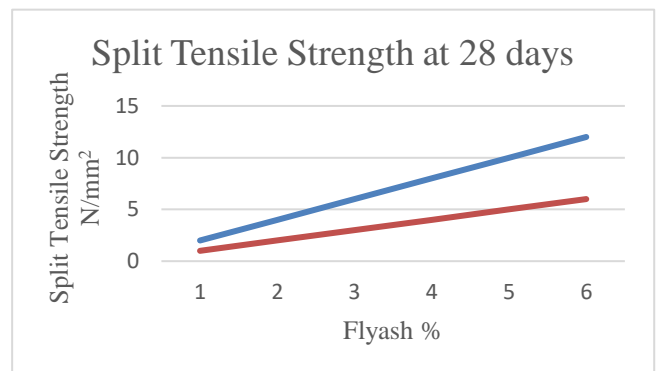
Fig. Canal lining

V. RESULTS AND DISCUSSION

In this, we got results of compressive strength of pervious concrete at 28 days are plotted below. The results are approximately and also satisfactory. The below graph clearly understands about compressive strength of concrete concerning fly ash percentage.



We got results of split tensile strength of pervious concrete at 28 days are plotted below. All these results are satisfactory and acceptable. The below graph clearly understands the split tensile strength of pervious concrete concerning fly ash percentage.



VI. CONCLUSION

Pervious concrete is one of the excellent materials, and it is used worldwide. The main importance of pervious concrete is to improve the ground runoff and improve water storage in the structure or system. It gives better results than conventional concrete. So, the strength difference between Pervious Concrete and Conventional Concrete is also the same. It is also used for low traffic volumes and pavements and roofs, so the study of pervious concrete is necessary to understand ground recharges of water.

ACKNOWLEDGEMENT

This Research Paper is Dedicated to My Parents GomasaSammaiah and GomasaSammakka, for always supporting and encouraging me in hard times, and My Special thanks to My Goddess Sister Rajamani, My Loving Brother Vijay.

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